

## Remarks

Claims 15-31 are rejected as being unpatentable over the patent to Ose in view of the patent to Frosien.

Valid rejection under 35 USC 103(a) requires evidence of a suggestion or motivation for one skilled in the art to combine prior art references to produce the claimed invention. US Court of Appeals for the Federal Circuit (*Ecolchem inc. v Southern California Edison Co.*, Fed. Cir., No. 99/1043, 9/7/00).

The best defense against hindsight-based obviousness analysis is the rigorous application of the requirement for showing a teaching or motivation to combine the prior art references, according to the court.

The patents to Ose and Frosien do not motivate or suggest to one skilled in the art to combine these references to produce Applicant's claimed invention.

Recently, in *In Re Sang-Su Lee* (00-1158) the Court of Appeals for the Federal Circuit rendered a decision confirming the above principles. The court analyzed 35 USC 103 requirements starting from the Administrative Procedure Act and held (citations omitted):

"Tribunals of the PTO are governed by the Administrative Procedure Act, and their rulings receive the same judicial deference as do tribunals of other administrative agencies.

"The Administrative Procedure Act, which governs the proceedings of administrative agencies and related judicial review, establishes a scheme of "reasoned decision making." Not only must an agency's decreed result be within

the scope of its lawful authority, but the process by which it reaches that result must be logical and rational.

"As applied to the determination of patentability vel non when the issue is obviousness, it is fundamental that rejections under 35 USC §103 must be based on evidence comprehended by the language of that section. (Emphasis added). When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. (Emphasis added)

"The factual inquiry whether to combine references must be thorough and searching. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. There must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the Applicant. Teachings of references can be combined only if there is some suggestion or incentive to do so."

As stated above, Ose and Frosien do not motivate or suggest to a person skilled in the art to combine these references to duplicate the claims of the present invention.

Ose is not proper prior art for the present patent application. The present patent application has a priority date March 14, 2000, whereas Ose has a US filing date of

January 25, 2001 so that Ose does not form prior art according to 102 (e). Therefore, we are filing herewith a certified translation of the priority document for the present application. Based on this information the pending claims of the present application can be maintained.

Additionally, we are introducing two additional independent claims to differentiate the present invention over Ose, in case that Ose is held to be prior art according to 102 (e) or 102 (g). These additional claims are discussed as follows.

New claim 32, the first additional independent claim, combines claims 15 and 18. New claim 33, the second additional independent claim, combines claim 20 (including the features of claims 15), claim 24 and claim 27. Claims 34 and 35, corresponding to claims 16 and 17, are rewritten to depend on the second independent claim 33. New claim 36, corresponding to claim 19, is dependent on the first independent claim 32 and is additionally amended by the feature of "said detection system being located closer to said region near said axis than to said region remote from said axis." Claims corresponding to claims 37-45 are added as dependent on the second independent claim 33.

In claims 34 and 35 the preambles are changed to be directed to a particle beam apparatus.

The first additional independent claim 32 (corresponding to a combination of claims 15 and 18) is directed to a detector system having a target structure which target structure has a region remote from the optical axis and a region near the optical axis, and the region remote from the optical axis and the region near the optical axis are spaced apart one from the other in the direction of the optical axis, i.e. both regions are offset

from each other in the direction of the optical axis. Neither Ose nor Frosein disclose a target structure that has a first region close to the optical axis and a second region remote from the optical axis that are offset in the direction of the optical axis, i.e. a target structure which in a section plane including the optical axis has a z-like section. In contrast, Ose discloses a plane target structure 16 in the form of a conversion electrode 16 and an aperture filter diaphragm 62 arranged on the specimen side of the conversion electrode 16.

Also Forsien does not disclose a detection system having a target structure as claimed in the present invention. Forsien does not use an electron converting target structure at all but uses either an annular detector or a segmented detector (Figures 5 and 6) with the detection surface in a plane perpendicular to the optical axis or off-axial detectors (Figures 7 and 8) having a detection surface with a surface normal (perpendicular) to the optical axis (Figures 7 and 8) coating with a Wien filter that deflects the secondary electrons coming from the specimen into the direction of the surface normal to the detection plane. In view of this prior art, a detector system with the claimed target structure neither is anticipated nor obvious.

In the Office Action the Examiner stated "it is well known in the art that placement of detection systems near and remote from the optical axis, as recited in claim 18, can be used to separately detect backscattered and secondary electrons respectively in a particle beam apparatus." This reasoning does not in any way refer to the particular design of the target structure as claimed in claim 18. Therefore we have to assume that the examiner misunderstood claim 18.

New claim 33, the second additional independent claim, is limited by the features of pending claim 27 namely that the particle beam apparatus comprises a beam guiding tube and that the detection system is arranged outside the beam guiding tube behind a hole through a wall of the beam guiding tube or in a region of an interruption of the beam guiding tube. As the examiner also acknowledges with respect to claim 27, Ose does not disclose use of a beam guiding tube at all. However, the Examiner argues that it would have been obvious to improve the system of Ose with a beam guiding tube similar to that of Frosien. Frosien discloses the use of beam guiding tubes and provides two beam guiding tubes, a source side beam guiding tube 9b and a sample side beam guiding tube 10b, which are interrupted by an intermediate system comprising a deceleration electrode 9a, an acceleration electrode 10a and a detector system arranged between the deceleration electrode and the acceleration electrode. This argument neglects the fact that no skilled person would transfer the teaching of Frosien to the system disclosed by Ose. Such combination would not work for the following reasons:

According to the teaching of Frosien the back-scattered electrons and the secondary electrons emitted by the sample are decelerated between the same side beam guiding tube 10b and the electrode 10a to the energy with which the electrons have left the sample. With such low energies of a few electron volts that the secondary electrons will have after deceleration, the secondary electrons would be simply absorbed by the conversion electrode 16 but would not urge the conversion electrode 16 to emit secondary electrons. Accordingly, the detection system with a conversion electrode 16 as disclosed by Ose would not work for secondary electrons but only for back-scattered electrons. Therefore, the skilled person would not take into consideration a combination

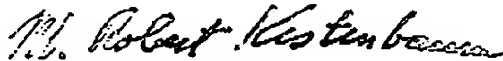
of Frosien and Ose i.e. to provide a detection system based on secondary electron conversion in an environment of low energy of the particles that are to be detected.

The above discussion also explains why the two additional independent claims 33 and 34 should be allowable even if Ose is proper prior art.

The PTO 2038 authorizes charging an additional claims fee for 10 additional claims over 20 (\$360). Please charge deposit account 11-0665 for any additional fees or credit any refunds due. A duplicate of this page is enclosed for this purpose.

Wherefore, further consideration and allowance of the claims is hereby respectfully requested.

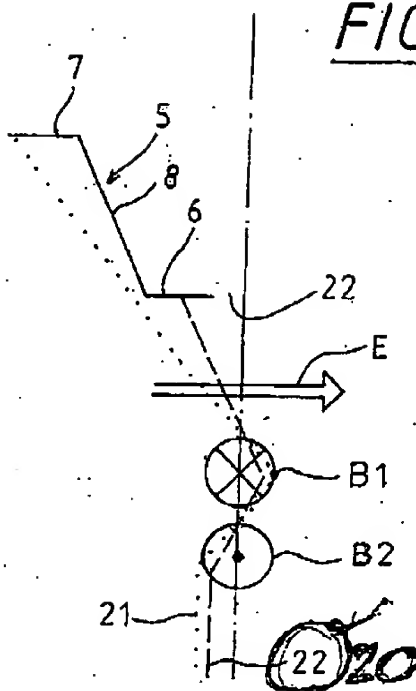
Respectfully submitted,



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I hereby certify this correspondence is being submitted to Commissioner for Patents, PO Box 1540, Alexandria, Virginia 22313-1450 by facsimile transmission on April 22, 2004, fax number (703) 872-9306.

  
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FIG. 2FIG. 3